

REMARKS

Claims 1-11 are pending in this application. By this Amendment, claims 1-11 are amended. Support for the amendments to claim 1 may be found at least on page 3, lines 1-23 of the specification, and claim 1 is further amended to address informalities. Claims 2-11 are amended to address informalities and to correspond with the amendments to claim 1. Thus, no new matter is added by the above amendments. In view of at least the following, reconsideration and allowance are respectfully requested.

I. Personal Interview

The courtesies extended to Applicants' representative by Examiner Dalena at the personal interview held September 23, 2008, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below, which constitute Applicants' separate record of the interview.

II. Allowable Subject Matter

Applicants thank the Examiner for the indication that claims 7 and 8 contain allowable subject matter, and that claims 7 and 8 would be allowable if written in independent form to include the features of base claim 1 and the intervening claims.

III. Claim Rejections under 35 U.S.C. §103

The Office Action rejects claims 1-4 and 9-11 under 35 U.S.C. §103(a) over U.S. Patent Publication No. 2001/0011201 (Nishizaki) in view of U.S. Patent Publication No. 2004/0200662 (Tajima); and rejects claims 5 and 6 under 35 U.S.C. §103(a) over Nishizaki and Tajima in view of U.S. Patent No. 6,208,921 (Tsuechara). These rejections are respectfully traversed.

By this Amendment, independent claim 1 recites, in part, "a portion for calculating a provisional target steering angle for the wheels based upon an amount of a steering operation of the driver and a predetermined steering characteristic" and "a portion for controlling a

steering angle of the wheels based upon a final target steering angle incorporating therein the driver's steering operation, the predetermined steering characteristic and the reduction of the magnitude of the deviation of the actual turning state parameter from the target value for the turning state parameter when the magnitude of the deviation is at or above the reference value, wherein the target turning state parameter calculating portion calculates the target value for the turning state parameter by using the provisional target steering angle as a parameter representing a steered angle of the wheels."

Applicants respectfully submit that the applied art references do not disclose or establish any reason to provide at least the above-recited features of independent claim 1. Specifically, the matter defined by the "wherein" clause is not disclosed or taught by the applied references.

In computer assisted steering of a vehicle there may be three steering amounts. The first steering amount is the basic steering amount provided by a driver's operation of the steering wheel.

The second steering amount in computer assisted steering is a modification of the steering angle of the wheels relative to the turning of the steering wheel according to the predetermined steering characteristics such that the steering angle of the wheels is decreased relative to the turning angle of the steering wheel according to an increase of the vehicle speed as shown by the map of Fig. 3, so as to ensure the stability of steering against the increase of the running speed. The above-discussed modification was made by modifying the transmission ratio of the steering angle from the steering wheel to the wheels that are being steered in the conventional mechanical steering.

The third steering amount is a further modification of the steering angle of the wheels for the purpose of improving the turning performance of the vehicle. This third steering amount may be generated such that an actual turning state parameter is detected by a detector,

a target value for the turning state parameter is calculated, and a turning state control steering angle is calculated so as to reduce a deviation of the actual turning state parameter from the target value therefor. Thereafter, the steering angle of the wheels may be controlled based upon a final target steering angle that includes the first, second and third steering amounts.

The computer assisted turning control of the vehicle, referred to as the spin and driftout suppress control, may grasp a turning state of the vehicle by a vehicle turning state parameter such as a yaw rate, slip angle, etc. The computer assisted turning control may detect an actual value of a turning state parameter by a detector, while calculating or estimating a target value for the turning state parameter by computer. The computer assisted turning control may control the steering angle of the wheels so as to decrease the difference between the actual turning state parameter and the target value turning state parameter. In such a calculation or estimation of the target value for the turning state parameter, the steering amount is included as an input variable.

Because the steering amount is readily available from a sensor for detecting the turning angle of the steering wheel or a sensor for detecting the steering angle of the wheels, one of these two detected values may be used as an input variable of the steering amount in calculating the target turning state parameter by the computer.

However, when the steering angle obtained from the sensor for detecting the turning angle of the steering wheel is used in the calculation of the target turning state parameter, the modification of the steering angle according to the "predetermined steering characteristic," as recited in claim 1, is not included in the calculation. In contrast, when the steering angle obtained from the sensor for detecting the steered angle of the wheels is used in the calculation of the target turning state parameter, the modification by the turning state control is doubly incorporated in the calculation, thus, degrading the quality of the turning state control.

Applicants respectfully submit that the present application discloses an improved quality of computer assisted steering by obviating the problem in the conventional use of the signal from the steering wheel sensor or the steered angle sensor of the wheels as a variable input of steering amount in the calculation of the target turning state parameter. Thus, as recited in claim 1, the present application proposes the use of the provisional steering angle in the calculation of the turning state parameter of the vehicle.

Nishizaki and Tajima, individually or in combination, do not disclose or establish any reason to provide the features recited in independent claim, for at least the reasons discussed above. Furthermore, Tsuechara does not cure the above-discussed deficiencies in Nishizaki and Tajima. Therefore, the applied art references fail to render obvious the subject matter of independent claim 1, and the claims dependent therefrom.

Accordingly, withdrawal of the rejections is respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:AAT/ccs

Attachment:
Petition for Extension of Time

Date: December 23, 2008

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